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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/786,499 | 03/02/2001 | Michael Hobson | GJE-0004 | 1435 |
| 23413 | 7590 | 09/27/2005 | EXAMINER | |
| CANTOR COLBURN, LLP 55 GRIFFIN ROAD SOUTH BLOOMFIELD, CT 06002 | | | THOMPSON, JAMES A | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2624 | |

DATE MAILED: 09/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Advisory Action
Before the Filing of an Appeal Brief**

Application No.

09/786,499

Applicant(s)

HOBSON ET AL.

Examiner

James A. Thompson

Art Unit

2624

--The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

THE REPLY FILED 29 August 2005 FAILS TO PLACE THIS APPLICATION IN CONDITION FOR ALLOWANCE.

1. ☒ The reply was filed after a final rejection, but prior to or on the same day as filing a Notice of Appeal. To avoid abandonment of this application, applicant must timely file one of the following replies: (1) an amendment, affidavit, or other evidence, which places the application in condition for allowance; (2) a Notice of Appeal (with appeal fee) in compliance with 37 CFR 41.31; or (3) a Request for Continued Examination (RCE) in compliance with 37 CFR 1.114. The reply must be filed within one of the following time periods:

- a) ☐ The period for reply expires _____ months from the mailing date of the final rejection.
b) ☒ The period for reply expires on: (1) the mailing date of this Advisory Action, or (2) the date set forth in the final rejection, whichever is later. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of the final rejection.

Examiner Note: If box 1 is checked, check either box (a) or (b). ONLY CHECK BOX (b) WHEN THE FIRST REPLY WAS FILED WITHIN TWO MONTHS OF THE FINAL REJECTION. See MPEP 706.07(f).

Extensions of time may be obtained under 37 CFR 1.136(a). The date on which the petition under 37 CFR 1.136(a) and the appropriate extension fee have been filed is the date for purposes of determining the period of extension and the corresponding amount of the fee. The appropriate extension fee under 37 CFR 1.17(a) is calculated from: (1) the expiration date of the shortened statutory period for reply originally set in the final Office action; or (2) as set forth in (b) above, if checked. Any reply received by the Office later than three months after the mailing date of the final rejection, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

NOTICE OF APPEAL

2. ☐ The Notice of Appeal was filed on _____. A brief in compliance with 37 CFR 41.37 must be filed within two months of the date of filing the Notice of Appeal (37 CFR 41.37(a)), or any extension thereof (37 CFR 41.37(e)), to avoid dismissal of the appeal. Since a Notice of Appeal has been filed, any reply must be filed within the time period set forth in 37 CFR 41.37(a).

AMENDMENTS

3. ☐ The proposed amendment(s) filed after a final rejection, but prior to the date of filing a brief, will not be entered because
(a) ☐ They raise new issues that would require further consideration and/or search (see NOTE below);
(b) ☐ They raise the issue of new matter (see NOTE below);
(c) ☐ They are not deemed to place the application in better form for appeal by materially reducing or simplifying the issues for appeal; and/or
(d) ☐ They present additional claims without canceling a corresponding number of finally rejected claims.

NOTE: _____. (See 37 CFR 1.116 and 41.33(a)).

4. ☐ The amendments are not in compliance with 37 CFR 1.121. See attached Notice of Non-Compliant Amendment (PTOL-324).
5. ☐ Applicant's reply has overcome the following rejection(s): _____.
6. ☐ Newly proposed or amended claim(s) _____ would be allowable if submitted in a separate, timely filed amendment canceling the non-allowable claim(s).
7. ☐ For purposes of appeal, the proposed amendment(s): a) ☐ will not be entered, or b) ☐ will be entered and an explanation of how the new or amended claims would be rejected is provided below or appended.
The status of the claim(s) is (or will be) as follows:
Claim(s) allowed: _____.
Claim(s) objected to: _____.
Claim(s) rejected: 1-15.
Claim(s) withdrawn from consideration: _____.

AFFIDAVIT OR OTHER EVIDENCE

8. ☐ The affidavit or other evidence filed after a final action, but before or on the date of filing a Notice of Appeal will not be entered because applicant failed to provide a showing of good and sufficient reasons why the affidavit or other evidence is necessary and was not earlier presented. See 37 CFR 1.116(e).
9. ☐ The affidavit or other evidence filed after the date of filing a Notice of Appeal, but prior to the date of filing a brief, will not be entered because the affidavit or other evidence failed to overcome all rejections under appeal and/or appellant fails to provide a showing a good and sufficient reasons why it is necessary and was not earlier presented. See 37 CFR 41.33(d)(1).
10. ☐ The affidavit or other evidence is entered. An explanation of the status of the claims after entry is below or attached.

REQUEST FOR RECONSIDERATION/OTHER

11. ☒ The request for reconsideration has been considered but does NOT place the application in condition for allowance because: see attached.
12. ☐ Note the attached Information Disclosure Statement(s). (PTO/SB/08 or PTO-1449) Paper No(s). _____.
13. ☒ Other: Notice of References Cited (PTO-892).

DETAILED ACTION

Response to Arguments

1. Applicant's arguments, see page 2, lines 8-12, filed 29 August 2005, with respect to the objections to the declaration have been fully considered and are persuasive. Examiner appreciates Applicant providing a copy of the declaration for the case file. The objections to the declaration listed in item 4 of the previous office action, dated 09 June 2005 has been withdrawn.

2. Applicant's arguments filed 29 August 2005 have been fully considered but they are not persuasive.

Regarding page 2, line 14 to page 4, line 12: Firstly, to correct the clearly unintentional oversight on page 2, lines 15-16, claims 1, 2, 4, 5, 7 and 8 stand rejected under 35 USC §103(a) as being obvious over Puetter (US Patent 5,912,993) in view of Ulich (US Patent 5,457,639).

Applicant argues that Puetter does not recite "altering the coordinate basis of the data and signal from an original coordinate in order to produce a prediction function having a reduced set of variables", as recited in claim 1.

Examiner responds that, despite Applicant's allegation, the teachings found in Puetter that demonstrate reducing the number of degrees of freedom does, in fact, alter the coordinate basis of the data and signal from an original coordinate in order to produce a prediction function having a reduced set of variables.

The example given by Applicant does not fully address the reduction in the number of degrees of freedom for a three-dimensional Cartesian example. Applicant's example does not

Art Unit: 2624

demonstrate the mathematical concept of *degrees of freedom*. Degrees of freedom has a precise definition, which is given both on page 3, lines 8-15 of said previous office action and below. *Degrees of freedom* is different from the application of mere constraints to an n-dimensional space. Degrees of freedom does not involve *per se* the constraint of motion. Only in the application of the concept of degrees of freedom to physical motion problems will the constraint of motion be an issue. Reducing the number of degrees of freedom reduces the locus of available points such that some variables are defined in terms of other variables, as will be demonstrated below. As discussed in said previous office action, degrees of freedom is defined in the following way:

If there are N variables with M independent relationships ($M < N$) between the N variables - such as N variables and M linearly independent equations relating the N variables - then there are (N-M) independent variables, and thus (N-M) degrees of freedom. If there were N independent variables *before* adding constraints to reduce the number of degrees of freedom, then the coordinate basis has changed from \mathbb{R}^N to \mathbb{R}^{N-M} (N-dimensional to (N-M)-dimensional).

To use a modification of Applicant's example, in an three-dimensional Cartesian space (using X,Y,Z coordinates), Peutter would eliminate travel in one of these three coordinates, not merely restrict travel in all three coordinates. A reduction in the number of degrees of freedom is a reduction in the number of independent variables. Thus, if the number of degrees of freedom were reduced by one in the example given, travel would be restricted to only planar motion. For instance, three-dimensional independent variables (X,Y,Z) would be reduced to

Art Unit: 2624

two-dimensional independent variable (X,Y) if travel in the Z-direction was not allowed, and thus the Z variable fixed at a constant.

Another example is if two of the three coordinates are defined in terms of each other. For instance, given a three-dimensional Cartesian space, if Y is defined such that $Y=2 \cdot Z$, then the number of degrees of freedom is two since, for any Y, Z is already known, and vice versa.

If, as Applicant states, travel were restricted in all three directions, while this would apply constraints to the locus of available points, it would not reduce the number of degrees of freedom. Without the restriction posited by Applicant, there are three degrees of freedom (X, Y and Z). With the restrictions posited by Applicant, there are *still* three degrees of freedom (X, Y and Z) since there are three independent variables, all three of which are required to specify the location of a point. Again, degrees of freedom relate to the number of independent variables in a coordinate system, and not to the independent constraints applied to each variable. The mathematical constraints that reduce the number of degrees of freedom involve setting one variable as a function of another variable, or setting a particular variable to a constant value. By applying one the two types of constraints, the number of variables required to fully identify a point in the coordinate space is reduced by the number of independent applied constraints.

In support of Examiner's explanation, the following literature is provided:

Art Unit: 2624

- a. A definition given on the Wolfram Research website,
<http://mathworld.wolfram.com/DegreeofFreedom.html>
- b. Definitions given for both physics and statistics on the yourDictionary.com website,
<http://www.yourDictionary.com/ahd/d/d0100900.html>

Regarding page 4, line 13 to page 5, line 4: In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, the teachings lacking in Puetter are found in Ulich, as demonstrated on page 5, lines 17-29 of said previous office action; the manner of combining Ulich with Puetter is demonstrated on page 6, lines 1-5 of said previous office action; and the motivation to combine the references is specifically recited in Ulich, as demonstrated on page 6, lines 6-14 of said previous office action.

Regarding page 5, line 5 to page 6, line 4: Claims 13 and 16 are referred to as being rejected under 35 USC §103(a) as being obvious over Puetter in view of Ulich, Hofstein (US Patent 4,099,179) and Bahorich (US Patent 5,226,019). The confusion between claims 15 and 16 lies in the submission by Applicant on 02 March 2001 of a clean copy of the claims on page 4 of a

Art Unit: 2624

preliminary amendment, a copy of which is included in this action. In the clean copy of the claims, Applicant recites:

"Claim 15 is presented as follows in re-written clean format. - 15. (Amended) A method according to claim 1, wherein the signal is a communication signal.-

"Please enter the following new claim. --16. (Newly Added) A method according to claim 15, wherein the communication signal is a time-series signal."

In the response to the first non-final office action, dated 23 September 2004, Applicant did not cancel claim 16, but instead simply incorporated the limitations of claim 16 into claim 15 and did not even note the existence of claim 16, canceled or otherwise. Thus, the full subject matter of claim 15, as incorrectly presented by Applicant in response to said first non-final office action, is fully rejected in the rejections of claim 15 and claim 16 as presented in said previous office action. Essentially, the subject matter of claims 15 and 16, as properly presented in the clean copy of the claims, and as should have been presented in Applicant's response to said first non-final office action, are properly listed and rejected in said previous office action.

Additionally, claim 9 is not listed in the introductory sentence of item 9 since claim 9 is not discussed in item 9. Claim 9 is discussed in item 10 and is clearly listed in the introductory sentence of item 10, which can be found on page 12, lines 24-26 of said previous office action. The introductory sentences of items 8, 9 and 10 are accurate. The only difficulty lies in the incorrect listing of the claims in response to the first office action, dated 23 September 2004.

Art Unit: 2624

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James A. Thompson whose telephone number is 571-272-7441. The examiner can normally be reached on 8:30AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David K. Moore can be reached on 571-272-7437. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



20 September 2005

James A. Thompson
Examiner
Art Unit 2624



Thomas D.
~~THOMAS~~ LEE
PRIMARY EXAMINER